

James A. FitzPatrick  
Nuclear Power Plant  
268 Lake Road  
P.O. Box 41  
Lycoming, New York 13093  
315-342-3840



Michael J. Colomb  
Site Executive Officer

May 28, 1998  
JAFP-98-0183

United States Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station P1-137  
Washington, D.C. 20555

Subject: **Docket No. 50-333**  
**LICENSEE EVENT REPORT: LER-98-004**

**Manual Reactor Scram Due to a Rod Position Information System Power Supply Failure Resulting in Multiple Control Rod "Drift" Alarms**

Dear Sir:

This report is submitted in accordance with 10 CFR 50.73 (a)(2)(iv), "Any event or condition that resulted in a manual or automatic actuation of an engineered safety feature (ESF), including the reactor protection system (RPS)".

There are no commitments contained in this report.

Questions concerning this report may be addressed to Mr. Robert Steigerwald at (315) 349-6209.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Michael J. Colomb'.

MICHAEL J. COLOMB

MJC:RS:las  
Enclosure

cc: USNRC, Region 1  
USNRC Resident Inspector  
INPO Records Center

9806040105 980528  
PDR ADDCK 0500333  
S PDR

IE 221

EXPIRES 04/30/98

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (IT-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

James A. FitzPatrick Nuclear Power Plant

DOCKET NUMBER (2)

05000333

PAGE (3)

01 OF 05

TITLE (4)

Manual Reactor Scram Due to a Rod Position Information System Power Supply Failure Resulting in Multiple Control Rod "Drift" Alarms

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
05	01	98	98	-- 004	-- 00	05	28	98	N/A	05000	
									N/A	05000	
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
N		20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)			50.73(a)(2)(viii)
POWER LEVEL (10)		100			20.2203(a)(1)			50.73(a)(2)(ii)			50.73(a)(2)(x)
		20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)			73.71
		20.2203(a)(2)(ii)			20.2203(a)(4)			X 50.73(a)(2)(iv)			OTHER
		20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)			Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)			

## LICENSEE CONTACT FOR THIS LER (12)

NAME

Robert Steigerwald, Sr. Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

(315) 349-6209

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
E	AA	RJX	T329	Y					

## SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
---	------	-------------------------------	-------	-----	------

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 05/01/98, 12:32 (EDT) a manual reactor scram from approximately 100% power was initiated due to multiple control rod drift indications in the control room. It was subsequently determined that the rods had not drifted and the cause of the rod drift indications and alarm was a Rod Position Information System (RPIS) power supply failure. The Control Room Operators demonstrated conservative decision making when faced with the unexpected indications and inserted a manual reactor scram. Following the scram, six control rods did not immediately indicate "full in" and Emergency Operating Procedure EOP-3, "Failure to Scram" was entered. At 12:45, all rods were verified fully inserted and EOP-3 was exited. Emergency plan entry conditions were reviewed and no entry was required. An Equipment Failure Evaluation, including extent of conditions, was completed for the RPIS power supply failure. Corrective actions include a preventive maintenance evaluation for this and similar power supplies to determine appropriate preventive maintenance tasks and frequencies.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	98	-- 004	-- 00	02 OF 05

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

EIIIS Codes are in []

**Event Description:**

On May 1, 1998, 12:32 (EDT) a manual reactor scram from approximately 100 percent power was initiated due to multiple control rod [AA] drift indications in the control room. It was subsequently determined that the rods had not drifted and the cause of the rod drift indications and alarm was a Rod Position Information System (RPIS) power supply failure. The Control Room Operators demonstrated conservative decision making when faced with the unexpected indications and inserted a manual reactor scram.

At 12:32:02 on May 1, 1998, a "rod drift" alarm was received in the control room for rod 42-47. A Control Room Operator announced the alarm to the control room staff. Within seconds of the first alarm other control rod drift indications were received. The Control Room Operator selected rod 42-47 and the position indication for this rod was blank on the four rod display. The Control Room Supervisor directed a manual reactor scram which was carried out by the Control Room Operator at 12:32:14. The Intermediate Range and Source Range monitors were inserted and the Average Power Range Monitors were verified downscale.

Reactor water level dropped as a result of the scram. The high pressure injection systems, Reactor Core Isolation Cooling (RCIC) [BN] and High Pressure Coolant Injection (HPCI) [BJ], initiated on low level but did not inject due to the short duration of the initiation signal. Both Reactor Water Recirculation pumps [AD] tripped and a Group II containment isolation [JM] occurred on low level. Reactor water level recovered due to normal feedwater [SJ] injection. The Main turbine [TA] tripped on reverse power prior to actuation of the high reactor water level trip. The HPCI, RCIC, and "B" Feedpump turbines tripped on high reactor water level approximately 30 seconds after the scram. Water level reached a maximum of approximately 231 inches at 12:32:45. At 12:41 the "B" Feedpump was restarted and normal level control with the feedwater system was established. No safety relief valves were actuated.

Following the scram, six control rods did not immediately indicate "full in" and EOP-3, "Failure to Scram" was entered. Three of the control rods were verified inserted after replacing burnt-out light bulbs in their associated full core display modules. A computer generated full core rod scan was unsuccessful due to the failed RPIS inputs. At 12:45 the three rods with unknown positions were given momentary "insert" signals. The three rods then indicated "full in" and EOP-3 was exited. All rods were re-verified fully inserted. The Control Room Operator utilized Abnormal Operating Procedure, AOP-1, "Reactor Scram" to provide the momentary insert signals to the three control rods instead of EP-3, "Alternate Rod

**LICENSEE EVENT REPORT (LER)**  
**TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	98 --	004 --	00	03 OF 05

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**Event Description:** (cont'd.)

Insertion", as directed by EOP-3. The actions to provide insert signals to the control rods are essentially the same from either procedure. At 12:54 the scram was reset. Emergency plan entry conditions were reviewed and no entry was required.

**Cause:**

The cause of the multiple rod drift alarms was due to a +5 VDC RPIS power supply, 03PSY5, failure (Cause Code E). The equipment failure evaluation determined that the failure of the power supply was the result of overheating of internal components due to a failed internal cooling fan. The overheating caused failure of the regulating circuit that caused the output voltage to increase from a nominal +5 VDC to approximately +10VDC. This failure caused multiple rod positions to indicate a "drift" condition with a loss of position information. No control rods actually moved until the insertion of the manual scram.

The power supply, 03PSY5, was original plant equipment and was in service since 1974 with no documented failures. The power supply was not in the Preventive Maintenance Program, nor were there any preventive maintenance tasks performed on 03PSY5 per the work history database. The failure of the 03PSY5 power supply is attributed to a failed internal cooling fan which allowed the power supply to overheat causing failure of the regulator circuit. The internal cooling fan was found in a seized condition.

**Extent of Conditions:**

An extent of conditions evaluation was performed as part of the troubleshooting and repair effort. The following is a summary of the results of the extent of conditions review effort. The 03PSY5 power supply provides power to the logic chips on the printed circuit boards located in the RPIS "Y-page". All "Y-page" logic chips were stressed as a result of the over-voltage condition. It was determined that printed circuit cards on the "X-page" were not effected. The critical circuit cards associated with the "Y-page" were tested satisfactorily or replaced. Similar power supplies 03PSX5 and 03PSX28 were replaced.

**Analysis**

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv), "Any event or condition that resulted in a manual or automatic actuation of an engineered safety feature (ESF), including the reactor protection system (RPS)".

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	98 --	004 --	00	04 OF 05

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**Analysis** (cont'd.)

The plant responded as designed following the manual scram from approximately 100 percent power. There were no challenges to the reactor coolant pressure boundary or the fuel cladding integrity. This event and the transient response is bounded by previous James A. FitzPatrick Final Safety Analysis Report analyses including various generation load reject transients, turbine trip transients, and reactor isolation transients. Reactor pressure, reactor vessel level, and neutron flux response were consistent with these analyses. Therefore, the safety significance of this event was minimal.

The operators demonstrated conservative decision-making when they encountered multiple rod drift alarms by promptly inserting a manual scram. During the transient there were no other protection or control systems out of service. The operators verified that all control rods had inserted by observing APRMs downscale, the full core display and individual rod position indications.

**Corrective Actions:**

1. A Post Transient Evaluation was performed and completed prior to start up.
2. An Extent of Conditions evaluation regarding the RPIS 03PSY5 failure was completed prior to startup. Associated critical circuit cards and power supplies were either tested satisfactorily or replaced as a result of the evaluations.
3. An Equipment Failure Evaluation to determine the cause of the power supply failure was completed.
4. An evaluation will be done to determine the need to perform Preventive Maintenance Evaluations on those systems not previously addressed during an earlier Preventive Maintenance Evaluation effort.  
**Scheduled to be completed June 30, 1998.**
5. Appropriate preventive maintenance tasks and frequencies will be identified and assigned to important power supplies not currently in the Preventive Maintenance Program.  
**Scheduled to be completed August 30, 1998.**
6. A review of the appropriateness of current PM tasks and frequencies for components of the Reactor Manual Control System, Reactor Position Information System, Rod Worth Minimizer, and Rod Sequence Control System will be done.  
**Scheduled to be completed August 30, 1998.**

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	98	-- 004	-- 00	05 OF 05

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Corrective Actions: (cont'd.)

7. The use of EP-3 versus AOP-1, for inserting control rods while in EOP-3, was reviewed by each operating crew prior to startup (ACT-98-32426). The use of the correct procedures will also be reviewed during Licensed Operator Requalification Training.  
**Scheduled to be complete August 1, 1998.**

Similar Events:

None

Failed Component Identification:

Manufacturer:	TRYGON
Model Number:	L5R6-70
EPIX (NPRDS) Manufacturer Code:	T329
EPIX (NPRDS) Component Code:	RJX

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9806040105      DOC. DATE: 98/05/28      NOTARIZED: NO      DOCKET #  
FACIL: 50-333 James A. FitzPatrick Nuclear Power Plant, Power Autho 05000333  
AUTH. NAME      AUTHOR AFFILIATION  
COLOMB, M.J.      Power Authority of the State of New York (New York Power Au  
RECIP. NAME      RECIPIENT AFFILIATION  
Document Control Branch (Document Control Desk)

SUBJECT: Forwards LER 98-004-00 re initiation of manual reactor scram  
due to rod position info sys power supply failure. No  
commitments contained in rept.

DISTRIBUTION CODE: IE22T      COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 1+5  
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

### NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD1-1 PD	1 1	WILLIAMS, J	1 1
INTERNAL:	AEOD/SPD/RAB	2 2	AEOD/SPD/RRAB	1 1
	FILE CENTER	1 1	NRR/DE/ECGB	1 1
	NRR/DE/EELB	1 1	NRR/DE/EMEB	1 1
	NRR/DRCH/HHFB	1 1	NRR/DRCH/HICB	1 1
	NRR/DRCH/HOLB	1 1	NRR/DRCH/HQMB	1 1
	NRR/DRPM/PECB	1 1	NRR/DSSA/SPLB	1 1
	NRR/DSSA/SRXB	1 1	RES/DET/EIB	1 1
	RGN1 FILE 01	1 1		
EXTERNAL:	L ST LOBBY WARD	1 1	LITCO BRYCE, J H	1 1
	NOAC POORE, W.	1 1	NOAC QUEENER, DS	1 1
	NRC PDR	1 1	NUDOCS FULL TXT	1 1

### NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS  
OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL  
DESK (DCD) ON EXTENSION 415-2083

FULL TEXT CONVERSION REQUIRED

TOTAL NUMBER OF COPIES REQUIRED: LTTR 24 ENCL 24

C  
A  
T  
E  
G  
O  
R  
Y  
1  
D  
O  
C  
U  
M  
E  
N  
T